

REMARKS/ARGUMENTS

Claims 1, 3-6, 8-10, 20, 22-25, 27-29, and 39-42 are pending in the present application, of which claims 1, 6, 20, 25, 39, 40, 41, and 42 are the independent claims. Applicants believe that the present application is in condition for allowance, for which prompt and favorable action is respectfully requested.

Claim Rejections – 35 USC § 101

Claims 1, 3-6, 8-10, 20, 22-25, 27-29, and 39-40 were rejected under 35 U.S.C. § 101 for being directed to non-statutory subject matter. In referring to claim 1, the Office Action stated that “the method must either (1) be tied to another statutory category or (2) transform an article, see *In re Bilski*, 545 F.3d 943, 88 USPQ2d 1385 (Fed. Cir. 2008).” The Office Action then argued that claims 1, 3-6 and 8-10 are not patentable because they “do not define a machine or computer implemented process steps do not define a machine or computer implemented process (see MPEP § 2106).”

Applicants respectfully disagree with the Office Action because the Office Action has failed to adequately address the transformation prong of *In re Biliski*. The court in *In re Biliski* specifically noted that “the main aspect of the transformation test that requires clarification here is what sorts of things constitute ‘articles’ such that their transformation is sufficient to impart patent-eligibility under § 101.” See, *In re Biliski*, 545 F.3d 943, 962 (Fed. Cir. 2008). The court reasoned that the raw materials of many information-age processes, however, are electronic signals and electrically-manipulated data. *Id.*

Here, the article being transformed is the “information bits of the control message” recited in claims 1, 3-6 and 8-10. Claims directed to processing of electronic communications, such as signals for transmission, have been recognized as types of claims that are eligible for patent protection. (Here, the control message is a signal for transmission. See paragraph [1010] of the specification, “the base station also transmits control messages on a Forward Packet Data Control Channel (F-PDCCH).” Transforming the “signal” is sufficient to satisfy the transformation prong of the test in *In re Biliski*, and no physical steps or acts are further required. *In re Biliski* provided a spectrum of examples that illustrate the types of transformations that are eligible for patent protection. As noted above, the court found that “the electronic transformation of the data itself into a visual depiction” was a sufficient example which satisfied the

transformation prong. *Id.* at 963. This is how the *Abele* court distinguished an upatentable broad independent claims reciting a process of graphically displaying variance of data from average values from a patentable dependent claims. *In re Abele*, 684 F.2d 902, 908-09 (CCPA 1982). However, the transformation of "the data itself into a visual depiction ... that represents specific physical objects or substances . . ." is not a requirement of the transformation prong, just one example which satisfied the transformation prong. *In re Biliski* at 963.

In the present patent application, claims 1, 3-6 and 8-10 "scramble[e] the information bits of the control message with the determined scrambling sequence in accordance with the metric." Thus, the information bits of the control message are identified as the subject matter being transformed to scrambled information bits. Because the "signal" for transmission, a patent-eligible article, recited in claims 1, 3-6 and 8-10, is transformed to scrambled information bits, i.e., transformed to a different state or thing, claims 1, 3-6 and 8-10 do transform the underlying subject matter as required by the transformation prong of the test. *See In re Biliski*, 545 F.3d at 951, n.2 (The Federal Circuit "note[s] that the PTO did not dispute that the process claims in *Nuijten* were drawn to patent-eligible subject matter under § 101 and allowed those claims.") Thus, claims 1, 3-6 and 8-10 qualify as a statutory process and are drawn to patent eligible subject matter under 35 U.S.C. § 101.

Applicants made similar arguments in the previous response dated July 27, 2009. In its response to Applicants' previous response with reference to claim 1, the Office Action stated that the "method does not expressly transform a particular article to a different state or thing." Applicants respectfully disagree because the process of claim 1 transforms the "signal" to be transmitted into a different state or thing by scrambling the information bits of the control message with the determined scrambling sequence in accordance with the metric. The information bits of the control message are arranged in a certain sequence before scrambling. The scrambling of the information bits of the control message rearranges the information bits of the control message into a scrambled sequence, and therefore transforms the "signal" into a different state or thing.

The Office Action also stated that "[a] new or different function or use can be evidence that an article has been transformed" and that the "transformation of electronic data has been found when the nature of the data has been changed such that it has a different function o[r] is suitable for different use." Applicants submit that the scrambling of the information bits of the

control message results in the "signal" having a different function or use than the "signal" before scrambling, providing further evidence that the process of claim 1 transforms the "signal." As explained in the present application, the scrambling of the information bits of the control message prevents repetitive false alarm events due to repetitive control message contents transmitted on a control channel (e.g., F-PDCCH). See, e.g., paragraphs [1016] and [1040] of the present application. Thus, the prevention of repetitive false alarm events due to repetitive control message contents is an example of a different function or use of the "signal" resulting from the scrambling of the information bits of the control message with the determined scrambling sequence in accordance with the metric.

The Office Action rejected claims 20, 22-24, 25, 27-29 and 39-40 by stating "the claimed apparatus directs to logic or module or algorithm and in accordance with the applicant's specification, logic or modules or algorithm is computer software [**Specification, page 15, paragraph 1055**]. As such, the claimed apparatus must include hardware or physical transformation necessary to realize any of the functionality of the claimed modules and produce a useful, concrete and tangible result. Absent recitation of such hardware or physical transformation as part of the claimed apparatus, it is considered non-statutory." Applicants respectfully disagree with the Office Action.

To begin with, each of claims 20, 22-24, 25, 27-29 and 39-40 are explicitly directed to an "apparatus," which constitutes patentable subject matter under 35 U.S.C. § 101. Therefore, Applicants submit that each of claims 20, 22-24, 25, 27-29 and 39-40 are directed to patentable subject matter for at least this reason.

Second, claims may cover both hardware and software embodiments. For instance, in *Overhead Door Corp. v. Chamberlain Group, Inc.*, 194 F.3d 1261, 1271-73 (Fed. Cir. 1999), the court held that one skilled in the art would have understood that a patent's disclosure of a flow diagram represented disclosure of an alternative software embodiment of a switch. The court concluded that the district court should have included software as corresponding structure to the switch means limitation in the patent. See *Id.* at 1273, "The differences in claim language, bolstered by the patentees' statements during reissue proceedings, cause this court to reach a broader construction for claim 5 than for claim 1.... The district court erred in ruling that only the mechanical switch in Figure 2 is 'corresponding structure' for the claimed 'switch means.' 'Switch means,' when properly construed, also covers the software-based embodiment described

in Figure 3.” Since claims 20, 22-24, 25, 27-29 and 39-40 may cover both hardware and software embodiments, these claims are drawn to patent eligible subject matter under 35 U.S.C. § 101 and are valid.

Third, as stated above, transforming the “signal” is sufficient to satisfy the transformation prong of the test in *In re Biliski*, and no physical steps or acts are further required.

Applicants made similar arguments in the previous response dated July 27, 2009. In its response to Applicants’ previous response with reference to claim 20, the Office Action stated that the “apparatus of claim 20 does not explicitly include a hardware component/element. Such claim apparatus may be interpreted either as software, hardware or combination thereof necessarily includes hardware, is interpreted in its broadest reasonable sense as software/code/instruction [in accordance with application’s specification page 15, paragraph 1055, the various logical blocks, modules, circuits and algorithms steps described in the present application may be implemented as electronic hardware, computer software or combination of both. Therefore, the claimed apparatus is not limited to hardware only or a combination of hardware and software only; instead being sufficiently broad so as to encompass software alone]. When software system is claimed without including a machine or a physical part of the device within the meaning of 35 USC § 101, it is considered non-statutory.” Applicants respectfully disagree.

As discussed above with reference to the decision in *Overhead Door Corp. v. Chamberlain Group, Inc.*, claims are not limited to hardware embodiments, and may cover both hardware and software embodiments. Further, each of claims 20, 22-24, 25, 27-29 and 39-40 is expressly directed to an “apparatus.” Thus, software embodiments covered by claims 20, 22-24, 25, 27-29 and 39-40 are tied to the “apparatus” of these claims.

Thus, Applicants respectfully submit that the apparatus claims 20, 22-24, 25, 27-29 and 39-40 constitute patentable subject matter and that the Office Action has not established a prima facie case that these claims do not encompass patentable subject matter. Applicants thus respectfully request withdrawal of this rejection.

In view of all of the above, Applicants submit that claims 1, 3-6, 8-10, 20, 22-24, 25, 27-29 and 39-40 are patentable. Applicant respectfully requests reconsideration.

Claim Rejections – 35 USC § 103

Claims 1, 3, 4, 6, 8, 9, 10, 22, 23, 25, 27, 28, and 39-42 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dent (U.S. 5,060,266) (hereinafter “Dent”) in view of Juha Heikkila et al. (GB 2294853) (herein after “Heikkila”). Claims 5 and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dent in view of Heikkila and in further view of Bodin (U.S. 6,973,189) (hereinafter “Bodin”). Claims 10 and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dent in view of Heikkila and in further view of Fisher (U.S. 5,321,754) (hereinafter “Fisher”). Reconsideration and withdrawal of these rejections are respectfully requested.

Claim 1 is directed to a method for scrambling information bits in a communications system. The method includes determining a scrambling sequence based on a metric of system time, wherein the determining the scrambling sequence includes determining the metric based on a subinterval of a system time interval of a control channel in which the information bits of a control message are to be transmitted, and scrambling the information bits of the control message with the determined scrambling sequence in accordance with the metric. Applicants submit that none of the applied references, taken alone or in combination, teaches the method of claim 1.

Dent discloses a system for synchronizing encryption devices in a digital cellular communications system. See Abstract of Dent. Dent discloses that, in a cellular system, an RF channel is divided into a series of “time slots” containing bursts of information. See col. 6, lines 63-65. Dent also discloses a fast associated control channel (FACCH) for sending control or supervisory messages to a base station. See col. 7, lines 24-31. Dent further discloses a ciphering unit 220 that converts a stream of message bits into a stream of enciphered bits for transmission and outputs a time-of-day or block count to a low rate channel encoder 211. See col. 12, line 55 65. The time-of-day or block count is transmitted to the base station, which uses the received time-of-day or block count to synchronize the deciphering unit of the base station with the ciphering unit 220. See col. 13, lines 35-40. However, Dent does not disclose or suggest determining a scrambling sequence based on a metric of system time, wherein the determining a scrambling sequence includes determining the metric based on a subinterval of a system time interval of a control channel in which the information bits of a control message are to be transmitted.

Contrary to the Office Action, Dent does not disclose determining a scrambling sequence in accordance with time, wherein determining a scrambling sequence includes determining the time based on a subinterval of a system time interval of a control channel in which the information bits of a control message are to be transmitted. In its contention that Dent discloses the above features, the Office Action appeared to equate the "time slot" of Dent with a subinterval of a system time interval and equate the FACCH of Dent with a control channel. See page 4 of the Office Action dated November 25, 2009. However, even assuming that the "time slot" of Dent is a subinterval of a system time interval and the FACCH of Dent is a control channel, Dent would still not disclose determining a scrambling sequence in accordance with time, wherein determining a scrambling sequence includes determining the time based on a subinterval of a system time interval of a control channel in which the information bits of a control message are to be transmitted. This is because Dent does not disclose determining the time-of-day or count block of the ciphering unit 220 of Dent based on "time slots" of the FACCH of Dent.

Therefore, Dent does not disclose or suggest determining a scrambling sequence based on a metric of system time, wherein the determining a scrambling sequence includes determining the metric based on a subinterval of a system time interval of a control channel in which the information bits of a control message are to be transmitted. Heikkila does not overcome the above deficiencies of Dent for at least the reasons set forth below.

Heikkila discloses a method for implementing subscriber-specific scrambling in a point-to-multipoint system based on time division data transmission, in which data for different subscribers are transmitted in different time slots. See page 1, lines 5-8 of Heikkila. Heikkila also discloses storing, in a memory, a subscriber-specific scrambling sequence for each subscriber. See page 3, lines 15-25. In each time slot, the scrambling sequence for the corresponding subscriber is read from memory and used to scramble the data for the subscriber. Thus, the time slots of Heikkila are time slots used in time division data transmission, in which the time slots correspond to different subscribers. Consequentially, Heikkila does not disclose or suggest determining a scrambling sequence based on a metric of system time, wherein the determining a scrambling sequence includes determining the metric based on a subinterval of a system time interval of a control channel in which the information bits of a control message are to be transmitted, and therefore fails to overcome the same deficiencies in Dent.

The other applied references Bodin and Fisher, taken alone or in combination, also fail to disclose determining a scrambling sequence based on a metric of system time, wherein the determining a scrambling sequence includes determining the metric based on a subinterval of a system time interval of a control channel in which the information bits of a control message are to be transmitted, and therefore fail to overcome the same deficiencies in Dent and Heikkila.

Applicants made similar arguments in the previous response dated July 27, 2009. However, in maintaining the rejection of claim 1, the Office Action did not address the substance of Applicants' arguments in the previous response. According to MPEP § 707.07(f) "[w]here the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it." (emphasis).

In the previous response, Applicants argued among other things, that evening assuming the "time slot" of Dent is a subinterval of a system time interval and the FACCH of Dent is a control channel, Dent would still fail to disclose determining a scrambling sequence in accordance with time, wherein determining a scrambling sequence includes determining the time based on a subinterval of a system time interval of a control channel in which the information bits of a control message are to be transmitted. Applicants argued that this is because Dent does not disclose determining the time-of-day or count block of the ciphering unit 220 based on "time slots" of the FACCH. See pages 10-11 of the Response dated July 27, 2009.

However, in its response to Applicants' previous response, the Office Action failed to address these arguments. For instance, the Office Action failed to address Applicants' argument that Dent does not disclose the above feature of claim 1 because Dent does not disclose determining the time-of-day or count block of the ciphering unit 220 based on "time slots" of the FACCH. The Office Action did not take note of this argument, much less answer the substance of it, as required by MPEP § 707.07(f). Instead, the Office Action simply summarized the disclosures of Dent and Heikkila without offering an explanation as to how their disclosures allegedly teach a subinterval of a system time interval of a control channel or rebut the Applicants' argument. See pages 13 and 14 of Office Action dated November 25, 2009.

Should the Examiner still maintain the rejection, Applicants respectfully request that the Examiner address the substance of Applicants' arguments, as required by MPEP § 707.07(f), and confirm that the Examiner is indeed equating the FACCH of Dent with the control channel recited in claim 1.

For at least the reasons given above, Applicants submit that claim 1 is patentable over the applied references, and respectfully requests that the rejection of claim 1 be withdrawn.

Independent claims 6, 20, 25, 39, 40, 41 and 42 recite features similar to those in claim 1, and are therefore also patentable for at least the same reasons given above for claim 1.

Claims 3-5, 8-10, 22-24, and 27-29 depend from claims 1, 6, 20 and 25, respectively, and are therefore also patentable for at least the same reasons given above for claims 1, 6, 20 and 25. Because each dependent claim is deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

CONCLUSION

In light of the amendments contained herein, Applicants submit that the application is in condition for allowance, for which early action is requested.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

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Respectfully submitted,

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